

New records of the cicada genus *Fidicinoides* Boulard and Martinelli, 1996 (Hemiptera: Cicadidae: Fidicinini) from the state of Mato Grosso, Brazil

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ABSTRACT: *Fidicinoides picea* (Walker, 1850) and *Fidicinoides poulaini* Boulard and Martinelli, 1996 are recorded for the first time from the state of Mato Grosso, extending the known distribution of these species to the south. Thereby, the number of *Fidicinoides* species from Mato Grosso is increased to nine, being Mato Grosso the state with the largest number of recorded species of this genus in Brazil.

Cicadas (Hemiptera: Cicadoidea) are large insects that are known for the distinctive sound that they emit. Currently, in Brazil, the occurrence of 156 species is reported (Sanborn 2008; Santos and Martinelli 2009a, b; Santos *et al.* 2010; Maccagnan *et al.* 2011; Sanborn 2011a; Boulard and Martinelli 2011). However, this number is certainly underestimated due to the low number of studies on local fauna, which directly affects the information about the distribution of these species.

The tribe Fidicini (Distant, 1905) is represented by sixteen Neotropical genera and was reviewed by Boulard and Martinelli (1996) who described the new genus *Fidicinoides*, considered sister group to *Fidicina* Amyot and Audinet-Serville, 1843. *Fidicinoides* differs from *Fidicina* by the short and narrow lateral meta-scutellar plates which do not completely cover the timbal cavities, in contrast with *Fidicina* where the lateral meta-scutellar plates are long and wide, closing the timbal cavities. Since its erection, several species have been transferred from *Fidicina* to *Fidicinoides*, and new species have been described (Boulard and Martinelli 1996, Sanborn 2007a, b; 2008a; Sanborn *et al.* 2008; Santos and Martinelli 2009a, b; Santos *et al.* 2010). Currently, the genus *Fidicinoides* is considered the richest of the tribe, being represented by 35 species, 25 of which occur in Brazil (Santos *et al.* 2010).

Several *Fidicinoides* specimens were collected in the municipality of Sorriso, state of Mato Grosso, Brazil (12° 40' S, 55° 43' W) with the use of light traps, model “Luiz de Queiroz”, set up with lamps F15T8BL (Silveira Neto *et al.* 1976). The traps were installed in cultivated areas with soybean surrounded by forest fragments. They remained in the field for two consecutive nights per week between the months of September and February, during the years of 2005 and 2008, totalizing eighteen months of collection. The examined material was deposited in the Entomology Collection of the Phytosanitation Department of the

Faculdade de Ciências Agrárias e Veterinárias of UNESP (FCAV), Jaboticabal, São Paulo, Brazil. Identifications were made with the use of literature and through comparison with reference material previously identified by Dra. Nilza Maria Martinelli and deposited in this collection. The principal character analyzed was the male genitalia that was compared with the original representations drawn in Boulard and Martinelli (1996) and Santos and Martinelli (2009b). For the study of the male genitalia, the abdomen was cut open with the aid of pincers, heated in a double-boiler in a solution of potassium hydroxide (5% KOH) for approximately 30 minutes and subsequently washed in distilled water. The genitalia were then placed in appropriately labeled eppendorf-type plastic tubes with glycerine (60%).

From the examined material, five species belonging to the genus *Fidicinoides* were identified.

***Fidicinoides picea* (Walker, 1850).** This species has previously been reported from Mexico, Panama, Colombia, Venezuela, Ecuador and French Guiana (Metcalf 1963; Duffels and van der Laan 1985; Boulard and Martinelli 1996; Sanborn 2001; 2006; 2007a, b). In Brazil there were reports of its occurrence only for the state of Pará (Santos and Martinelli 2009a). So, this is the first record of this species for the state of Mato Grosso. Material examined: BRAZIL, *Mato Grosso*: Sorriso, IX – 2007, S. Silveira Neto *col.*, 5 males, (FCAV, 327 – 331).

***Fidicinoides poulaini* Boulard and Martinelli, 1996.** This species has previously been reported from Colombia, Peru and Ecuador (Boulard and Martinelli, 1996; Sanborn, 2010). In Brazil there are reports of its occurrence only from the state of Pará (Santos and Martinelli, 2009a). So, this is the first record of this species for the state of Mato Grosso. Material examined: BRAZIL, *Mato Grosso*: Sorriso, XII – 2005, S. Silveira Neto *col.*, 1 male, (FCAV, 332); *ibidem*, IX – 2006, 5 males (FCAV, 333 – 337).

***Fidicinoides sucinalae* Boulard and Martinelli, 1996.** This species was previously reported from French Guiana and Brazil, in the states of Amazonas, Pará, Rondônia, Mato Grosso and São Paulo (Boulard and Martinelli 1996; Santos and Martinelli 2011, Sanborn 2011b). Material examined: BRAZIL, *Mato Grosso*: Sorriso, IX – 2007, S. Silveira Neto *col.*, 1 male, (FCAV, 338).

***Fidicinoides besti* Boulard and Martinelli, 1996.** This species was previously reported from Venezuela and Brazil, in the states of Amazonas, Pará, Rondônia and Mato Grosso (Boulard and Martinelli, 1996; Sanborn 2007a; Santos and Martinelli 2011). Material examined: BRAZIL, *Mato Grosso*: Sorriso, XII – 2005, S. Silveira Neto *col.*, 3 males, (FCAV, 339 – 341); ibidem, IX – 2006, 20 males (FCAV, 342 – 361); ibidem, IX – 2007, 3 males (FCAV, 362 – 364); ibidem, II – 2008, 3 males (FCAV, 365 – 367).

***Fidicinoides dolosa* Santos and Martinelli, 2009.** This species was previously reported only for the state

of Mato Grosso, Brazil (Santos and Martinelli 2009b). Material examined: BRAZIL, *Mato Grosso*: Sorriso, XII – 2005, S. Silveira Neto *col.*, 1 males, (FCAV, 368); ibidem, IX – 2006, 8 males (FCAV, 369 – 376); ibidem, IX – 2007, 3 males (FCAV, 377 – 379).

To complete its development, nymphs of cicadas suck sap from the root of their host plant. In general this nymphal stage lasts several years (Boulard 1965, Pachas 1966, Logan 2006). Since soybean is a seasonal crop, with only a few months from planting to harvesting, the full development of cicadas should not be possible on soybean. Although the traps were set in a soybean cultivated area, we can assume that all cicadas collected were attracted from the nearby forest.

The new records in this paper bring the total to nine species of *Fidicinoides* recorded from the state of Mato Grosso, which becomes the state with the largest number of *Fidicinoides* species in Brazil (Table 1).

TABLE 1. Species of *Fidicinoides* (Cicadidae: Fidicinini) recorded from the state of Mato Grosso, Brazil.

SPECIES	REFERENCE
<i>Fidicinoides besti</i> Boulard and Martinelli, 1996	Boulard and Martinelli (1996); Santos and Martinelli (2011)
<i>Fidicinoides brunnea</i> Boulard and Martinelli, 1996	Boulard and Martinelli (1996); Santos and Martinelli (2011)
<i>Fidicinoides carmenae</i> Santos and Martinelli, 2009	Santos and Martinelli (2011)
<i>Fidicinoides dolosa</i> Santos and Martinelli, 2009	Santos and Martinelli (2009)
<i>Fidicinoides duckensis</i> Boulard and Martinelli, 1996	Boulard and Martinelli (1996); Santos and Martinelli (2011)
<i>Fidicinoides picea</i> (Walker, 1850)	First record
<i>Fidicinoides poulaini</i> Boulard and Martinelli, 1996	First record
<i>Fidicinoides pronoe</i> (Walker, 1850)	Metcalf (1963); Martinelli and Zucchi (1997)
<i>Fidicinoides sucinalae</i> Boulard and Martinelli, 1996	Boulard and Martinelli (1996)

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LITERATURE CITED

Boulard, M. 1965. Notes sur la biologie larvaire de las cigales (Hom. Cicadidae). *Annales de la Société Entomologique de France* 1(3): 503-521.

Boulard, M. and N.M. Martinelli 1996. Révision des Fidicinini; nouveau statut de la tribu, espèces connues et nouvelles espèces (Cicadomorpha, Cicadidae, Cicadinae). *EPHE, Biologie et Evolution des Insectes* 9:11-81.

Boulard, M. and N.M. Martinelli 2011. Nouvelles cigales néotropicales de las sous-tribu des Guyalnina (Rhynchota, Cicadidae, Cicadinae, Fidicinini). *Lambillionea* 111(3): 219-232.

Duffels, J.P. and P.A. van der Laan. 1985. *Catalogue of the Cicadoidea (Homoptera, Auchenorrhyncha) 1956-1980*. Dordrect: Dr. W. Junk Publishers. 414 p. (Series Entomologica: 34).

Logan, D. 2006. Nymphal development and lifecycle length of *Kikihia ochrina* (Walker) (Homoptera: Cicadidae). *The Weta* 31: 19-22.

Maccagnan, D.H.B., Martinelli, N.M., G. Goemans and E. Guilherme. 2011. *Zammara smaragdula* Walker, 1858 (Hemiptera: Cicadidae): First record for Brazil. *Check List* 7(4): 563-564.

Martinelli, N.M and Zucchi, R.A. 1997. Cigarras (Hemiptera, Cicadidae - Tibicinidae). Distribuição, hospedeiros e chave para as espécies. *Anais da Sociedade Entomológica do Brasil* 26(1): 133-144.

Metcalf, Z.P. 1963. *General catalogue of the Homoptera, fascicle VIII. Cicadoidea. Part 1. Cicadidae*. Raleigh: Waverly Press. 919 p.

Pachas, P.O. 1966. La chicharra de la yerba mate (*Fidicina mannifera*, Fab., 1803) su biología e observaciones sobre los métodos de control en Misiones (República Argentina). *Idia* 217: 5-15.

Sanborn, A.F. 2001. A first contribution to a knowledge of the cicada fauna of El Salvador (Homoptera: Cicadoidea). *Florida Entomologist* 84(3): 449-450.

Sanborn, A.F. 2006. New records for the cicada fauna from four Central American countries (Hemiptera: Cicadoidea: Cicadidae). *Florida Entomologist* 89(1): 75-79.

Sanborn, A.F. 2007a. Additions to the cicada fauna of Venezuela with the description of a new species and checklist of the Venezuelan cicada fauna (Hemiptera: Cicadoidea: Cicadidae). *Zootaxa* 1503: 21-32.

Sanborn, A.F. 2007b. New species, new records and checklist of cicadas from Mexico (Hemiptera: Cicadoidea: Cicadidae). *Zootaxa* 1651: 1-42.

Sanborn, A.F. 2008. New records of Brazilian cicadas including the description of a new species (Hemiptera: Cicadoidea, Cicadidae). *Neotropical Entomology* 37(6): 685-690.

Sanborn, A.F., T.E. Moore and A.M. Young. 2008. Two new cicada species from Costa Rica (Hemiptera: Cicadomorpha: Cicadidae) with a key to the species of *Fidicinoides* in Costa Rica. *Zootaxa*, 1846, 01-20.

Sanborn, A.F. 2010. The cicadas of Colombia including new records and the description of a new species (Hemiptera: Cicadidae). *Journal of Natural History* 44(25-26): 1577-1607.

Sanborn, A.F. 2011a. A new species of *Orellana* Distant from Brazil (Hemiptera: Cicadoidea: Cicadidae). *Proceedings of the Entomological Society of Washington* 113(3), 377-384.

Sanborn, A.F. 2011b. Checklist of the cicadas of French Guiana including new records and the description of nine new species (Insecta, Hemiptera, Cicadoidea, Cicadidae). *Zoosystema* 33(3): 377-418. DOI: 10.5252/z2011n3a6.

Santos, R.S. and N.M. Martinelli. 2009a. Primeiro registro de *Fidicinoides picea* (Walker, 1850) e *Fidicinoides poulaini* Boulard & Martinelli, 1996 no Brasil. *Ciência Rural* 39(2): 559-562

Santos, R.S. and N.M. Martinelli. 2009b. Descrição de novas espécies de *Fidicinoides* Boulard & Martinelli, 1996 (Hemiptera: Cicadidae) de ocorrência no Brasil. *Neotropical Entomology* 38(5) 638-642.

Santos, S.S., N.M. Martinelli, D.H.B. Maccagnan, R. Ribeiro and A.F. Sanborn. 2010. Description of new cicada species associated with the coffee plant and an identification key for the species of *Fidicinoides* (Hemiptera: Cicadidae) from Brazil. *Zootaxa* 2602: 48-56.

Santos, R.S. and N.M. Martinelli. 2011. Morphological characterization of five brazilian species of *Fidicinoides* (Hemiptera: Cicadidae). *Revista Colombiana de Entomologia* 37(1): 341-345.

Silveira Neto, S.; O. Nakano; D. Bardin and N. A. Villanova. 1976. *Manual de Ecologia dos Insetos*. Piracicaba: Agronômica Ceres. 419p.

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